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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,696	02/19/2004	Hiroyuki Yoda	BJS-914-180	2027
23117 7590 11/05/2009 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
BERDICHEVSKY, MIRIAM				
ART UNIT		PAPER NUMBER		
1795				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/780,696

**Applicant(s)**

YODA ET AL.

**Examiner**

MIRIAM BERDICHEVSKY

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on AF 10/19/2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Remarks*

Claims 1-17 are currently pending.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 9, 11-12, 14-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi (JP 2001-168367).

As to claim 1, Oishi teaches a photovoltaic module comprising: a plurality of photovoltaic cells arranged in an array (figures 5-6: 6, [0062]); a translucent first and second substantially rigid plate member of resin (15) adjacent the light receiving and non-light receiving surfaces of the photovoltaic cells (figures 5-6, [0062]); a translucent filler (figure: 16) located between the first and second plates wherein the light receiving surface is unbonded/not adhered to the filler layer ([0064]).

In regard to claim 9, Oishi teaches that the plurality of cells each have a light receiving side unbonded to the filler ([0064]).

Further regarding claim 11, Oishi teaches first and second plates of glass (figures 1 and 9: 1, 2a and 2b [0049]) and a spacer member (figures 1 and 9: 3)

Oishi is not specific to the solar cells being electrically interconnected.

However, Oishi teaches that cable 19 in figure 9 removes the electricity produced from the submodule ([0068]). One of ordinary skill would appreciate that in order for one cable to remove the generated electricity the solar cells are electrically interconnected within the submodule. Moreover, it would have been obvious to one of ordinary skill in the art at the time of the invention to interconnect the solar cells of the array to minimize electrical wiring and create a functioning product.

Regarding claim 12, Oishi teaches air between the subassembly and the glass plates (figure 9). The Examiner notes that although not explicit to an air pocket, the module of Oishi is movable and does not disclose a material occupying the space such that one of ordinary skill would appreciate that the regions are filled with air.

With respect to claim 14, Oishi discloses that the subassembly is detachably attached to a frame formed of the first and second glass plates and the spacer (figure 6, [0064]).

Regarding claim 15, Oishi teaches that the spacer member has a guide rail (18) to detachably attach the subassembly to the frame (figure 6).

In regard to claim 17, Oishi teaches that the plurality of cells each have a light receiving side unbonded to the filler ([0064]).

3. Claims 2-4, 7-8, 10, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi as applied to claim 1 above and further in view of Yoda (JP 2003-026455).

In regard to claims 2, 3, and 4, Oishi does not specifically teach what material is used as the resin plates.

Yoda discloses the a photovoltaic subassembly of interconnected solar cells sandwiched between resin films and enclosed in a filler (figure 1) and further discloses that the first plate member (5 and 4) of resin is a translucent stack of a film containing resin film containing polyethylene terephthalate (PET) of a fluorine system as a source material (paragraph 38).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the fluororesin system of Yoda in Oishi because fluororesins are weather resistant [0038]) especially in light of the fact that the selection a material for its intended used is within the skill of a worker in the art (MPEP 2144).

Regarding claim 7, Oishi is silent to the specific material of the filler.

Yoda discloses a the filler layer (4) containing as a source material such as a resin selected from the group consisting of poly vinyl butyral (PVB) resin ([0021]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the PVB of Yoda as the filler in Oishi because of its weatherproof closing ([0021]) especially in light of the fact that the selection a material for its intended used is within the skill of a worker in the art (MPEP 2144).

Regarding claim 8, Oishi is silent to the subassembly being laminated.

Yoda discloses the subassembly of claim 1 above, wherein the plurality of photovoltaic cells (11) is sealed in the filler layer (4) as the cells undergo a lamination process employing a pouching lamination apparatus (paragraph 26, 27 & 28).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the lamination of Yoda in Oishi because the process ensures weatherproofing ([0026]-[0028]).

With respect to claim 10, Oishi teaches that cable 19 provides electrical output connection in said filler ([0068]) but is silent to a wire electrically interconnecting the solar cells.

Yoda discloses a conductive wire electrically connecting (9) the plurality of photovoltaic cells (11) and also allowing an external, electrical output (9) is provided in the filler layer (4) and the filler layer (4) has an end provided with an output terminal electrically connected (9) to the conductive wire (paragraph 48 & 49).

One of ordinary skill in the art would appreciate that wires and cables are art recognized equivalents and that substitution would have predictable results and therefore would have been obvious. Moreover as discussed above in relation to claim 1, it would have been obvious to interconnect the solar cells within the subassembly filler in order to create a functioning product and minimize the amount of wiring.

In regard to claim 13, Oishi is silent to the spacer layer material specifically having butyl rubber attached thereto.

Yoda discloses a spacer member having butyl rubber attached thereto and the spacer member (23) is fitted between the first (21) and second (22) plates of glass at their respective ends to pose the butyl rubber (31) between the spacer member (23) and the first (21) and second (22) plates of glass and silicone resin is applied and allowed to set outer than the spacer member (23) between the first (21) and second

(22) plates' respective ends to allow the space to be watertight/waterproof (paragraph 43).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the butyl rubber of Yoda in Oishi because the spacer with butyl rubber allows for watertight/waterproofing of the device ([0043]) especially in light of the fact that the selection a material for its intended used is within the skill of a worker in the art (MPEP 2144).

Regarding claim 16, although Oishi is silent to the specific type of glass used for the first and second glass plates.

Yoda discloses that the first (21) and second (22) plates of glass are of different types or a single type selected from the group consisting of tempered glass, and wired glass (paragraph 13 & 23).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the tempered glass of Yoda in Oishi because tempered glass is more resistant to breakage and the selection a material for its intended used is within the skill of a worker in the art (MPEP 2144).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi as applied to claim 1, in view of Yaba (US 5,059,254).

With respect to claim 5, Oishi fails to disclose wherein at least one of the first and second plate members/interlayer of resin is colored and transparent.

Yaba discloses a photovoltaic module (Figure 5) with a colored polyvinyl butyral layer (4) and further teaches that it is preferable that interlayer is a colored polyvinyl

butyral and transmits the visible light in ranges from 5 to 60% (col.7; lines: 40-43). Yaba et al. further teaches that if the light transmittance is higher than 60% it is difficult to reduce the glare from the back electrode and/or grid electrode of a solar cell, and if the transmittance is less than 5% then the visibility is greatly reduced (col.7; lines: 42-52).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the colored polyvinyl butyral resin interlayer of Yaba to the subassembly of the photovoltaic device of Oishi in order to achieve from 5-60% visible light transmittance otherwise if the transmittance is higher than 60% it may be difficult to reduce the glare from the back electrode of the solar cell/photovoltaic module and if the transmittance is less than 5% then the visibility is greatly reduced.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi as applied to claim 1, in view of Ichinose (US 5681402).

With respect to claim 6, Oishi is silent to the subassembly of claim 4 above, wherein at least one of the first and second plate members of resin is an ultraviolet absorber.

Ichinose teaches the use well known UV absorbers in EVA and fluoro-resin systems for protection of solar cells (col. 25, lines 26-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the UV absorber of Ichinose in the resin system of Oishi because UV absorbers improve the weatherability of the resin, as taught by Ichinose (col. 25, lines 26-50).



***Response to Arguments***

Applicant's arguments filed 10/19/2009 that the assignee of Fujioka removes Fujioka as prior art under U.S.C 35 102e have been fully considered and are persuasive. The rejection has been withdrawn however a new ground of rejection has been presented.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MIRIAM BERDICHEVSKY** whose telephone number is (571)270-5256. The examiner can normally be reached on M-Th, 10am-8pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Michener can be reached on (571) 272-1424. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./  
Examiner, Art Unit 1795

/Jennifer K. Michener/  
Supervisory Patent Examiner, Art Unit 1795